Type LM
S/N 3547

MINIRECORDER SERIES 300

LM 23 ....

LM 24 ....

LINSEIS
The Recorder Company
P. O. Box 666
Princeton Jct., NJ 08550
Phone (609) 921-1857

MP MASTER
MA29147

LINSEIS

MINIRECORDER SERIES 300

LM 23 ....

LM 24 ....

LM 300

1. Technical Data

Number of Channels	1 or 2, independently adjustable
Writing System	fiber-tip pens channel 1 - green channel 2 - red
Writing width	120 mm
Recording Paper	roll paper with edge-perforations
Paper Advance	crystal-controlled stepping motor 12 positions: 1 2 5 10 20 50 cm/min 1 2 5 10 20 50 cm/h fast paper advance (50 cm/min) by means of lever control
Supply Voltage	LM 24 110 - 120 V 50-60 Hz fuse 0.5 Z tr. 220 - 240 V 50-60 Hz fuse 0.2 A tr. LM 23 12 V fuse 2 A tr. power requirement 0.3 to 3.8 W Charging Unit 110 - 120 V 50-60 Hz 220 - 240 V 50-60 Hz built-in temperature fuse output 12-14 V
Dimensions	W x H x D 250 x 75 x 325 mm
Weight	max 10 kg
Response Time	0.4 sec.
Error	0.5%
Linearity of potentiometer	0.25%
Zero Pointsetting	continuous over full writing width
Measuring Ranges	10 20 50 100 200 500 mV 1 2 5 10 20 50 V by means of switch X Pre-Amplifier: 1 2 5 10 20 50 mV

for thermocouples (Temperature Range ≙ 50 mV)

PtRh/Pt	0 - 1600°C	
PtRh/Pt	0 - 1000°C	
NiCr/Ni	0 - 1000°C	
NiCr/Ni	0 - 400°C	
NiCr/Ni	0 - 100°C	or 0 - 200°C
Fe/Konst	0 - 400°C	
Fe/Konst	0 - 100°C	or 0 - 200°C
Cu/Konst	0 - 250°C	
Cu/Konst	0 - 100°C	

all thermocouple inputs with 0°C reference junction

for Pt 100- Measurement:

in 2-, 3-, or 4-lead technique

Sensitivity Expansion: continuously adjustable up to 2.5 times the selected range

Input Impedance: constant 2 MOHM

Source Impedance: Max. 10 KOHM

for LM 23

asymetric, as there is no galvanic separation at approx. +6 V of the accumulator

Temperature Drift:

mV-ranges	20 µV/K
V-ranges	2 mV/K

Function Indicator: by means of LED

With battery Pack: capacity 12 V/3 Ah

Operating time:

1-channel	approx. 24 h.
2-channel	approx. 12 h.

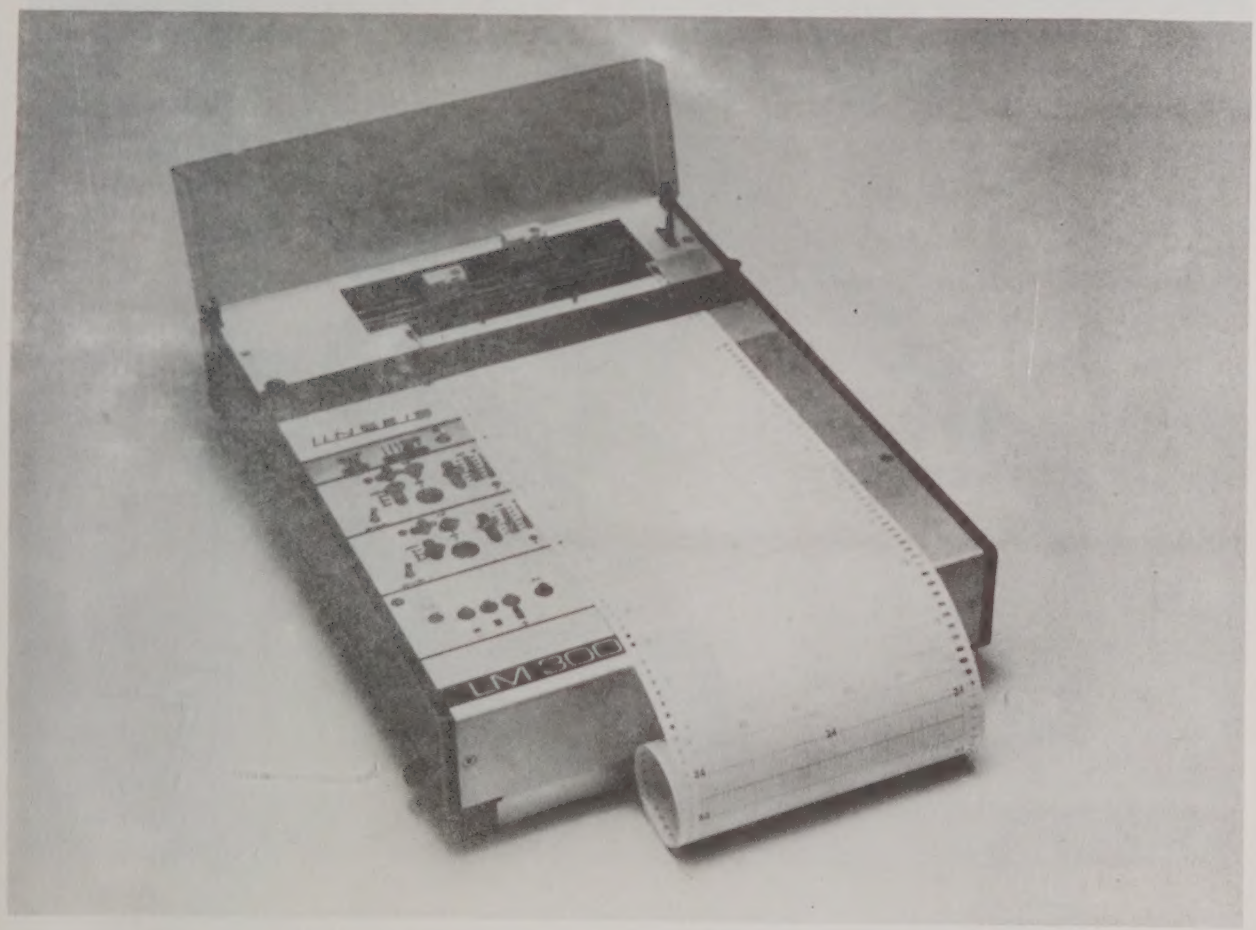
battery test with LED
recharging by means of external charging unit

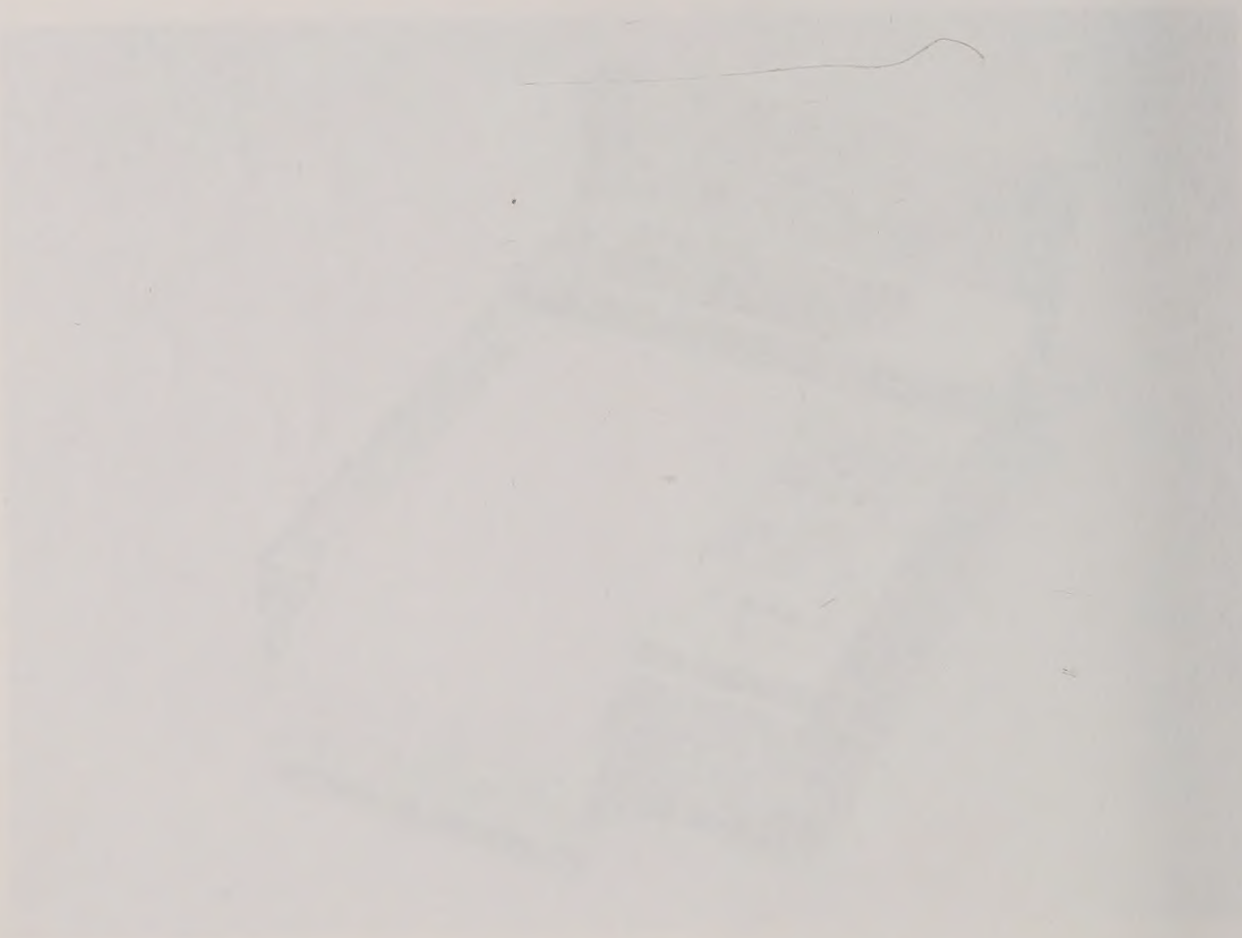
2. Congratulations! With the purchase of this mini-recorder of the Series "LM ..." you have acquired an instrument that represents the successful culmination of many years of intensive research and development. In the design and construction of this instrument we placed special emphasis on reliable operation, simplicity of handling, and user-oriented application possibilities. With the following instructions we want to show you haw you can profitably use all possibilities of this instrument and, thereby, always obtain excellent results.

Digitized by the Internet Archive
in 2025

https://archive.org/details/manualsplus_06912

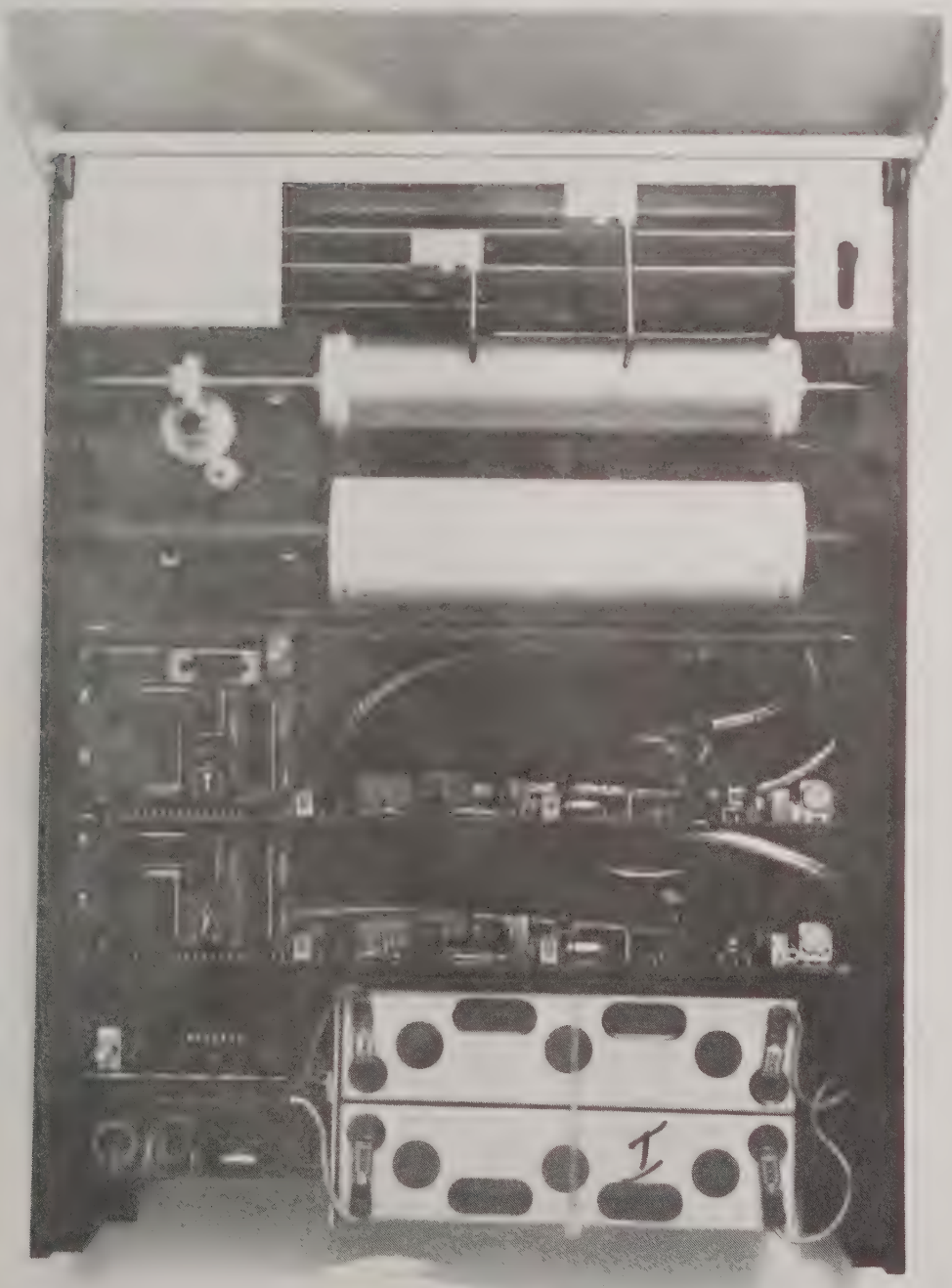
LM 24.20.20





LM 23.20.20

3. The LM recorder is a compensation-recorder, just like all others in the LINSEIS product line. Construction is modular so that retrofitting of Channel 2 can be carried out without problems. And by any possible defect the circuit board can easily be exchanged.



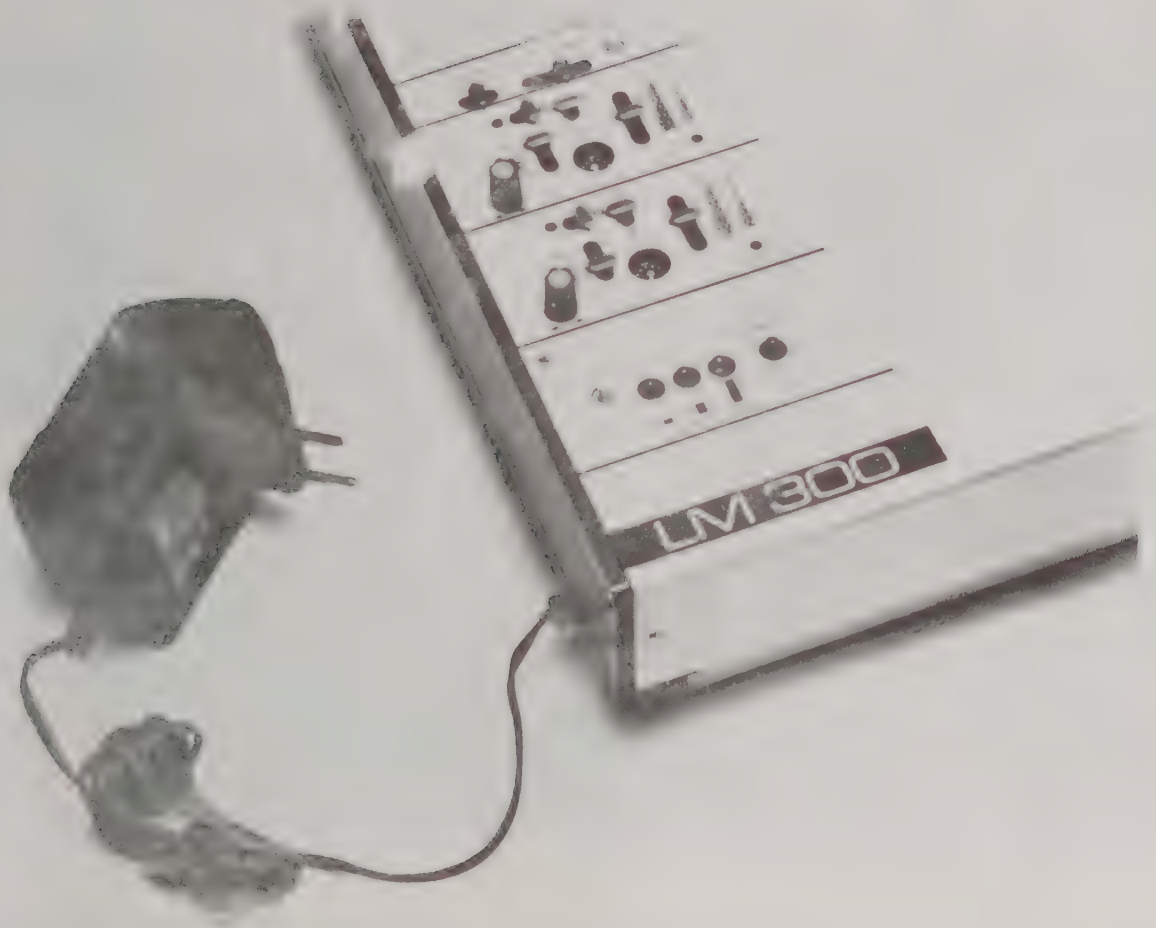
4. Installation and Operation

Since this instrument can be equipped for either line or batter operation it is possible to use this recorder as a bench-top stationary unit or as a portable instrument in various different areas.

Before use, make sure what line voltage is available or - in battery operation - what supply voltage is available.

In case no supply voltage was specified when the instrument was ordered, then the recorder requires 220 V / 50-60 Hz and the battery must have 12 V.

Take a few moments now to familiarize yourself with the instrument, its controls, and proper operating procedures. This will pay vast dividends later and will allow you to get the ultimate use of this fine equipment.

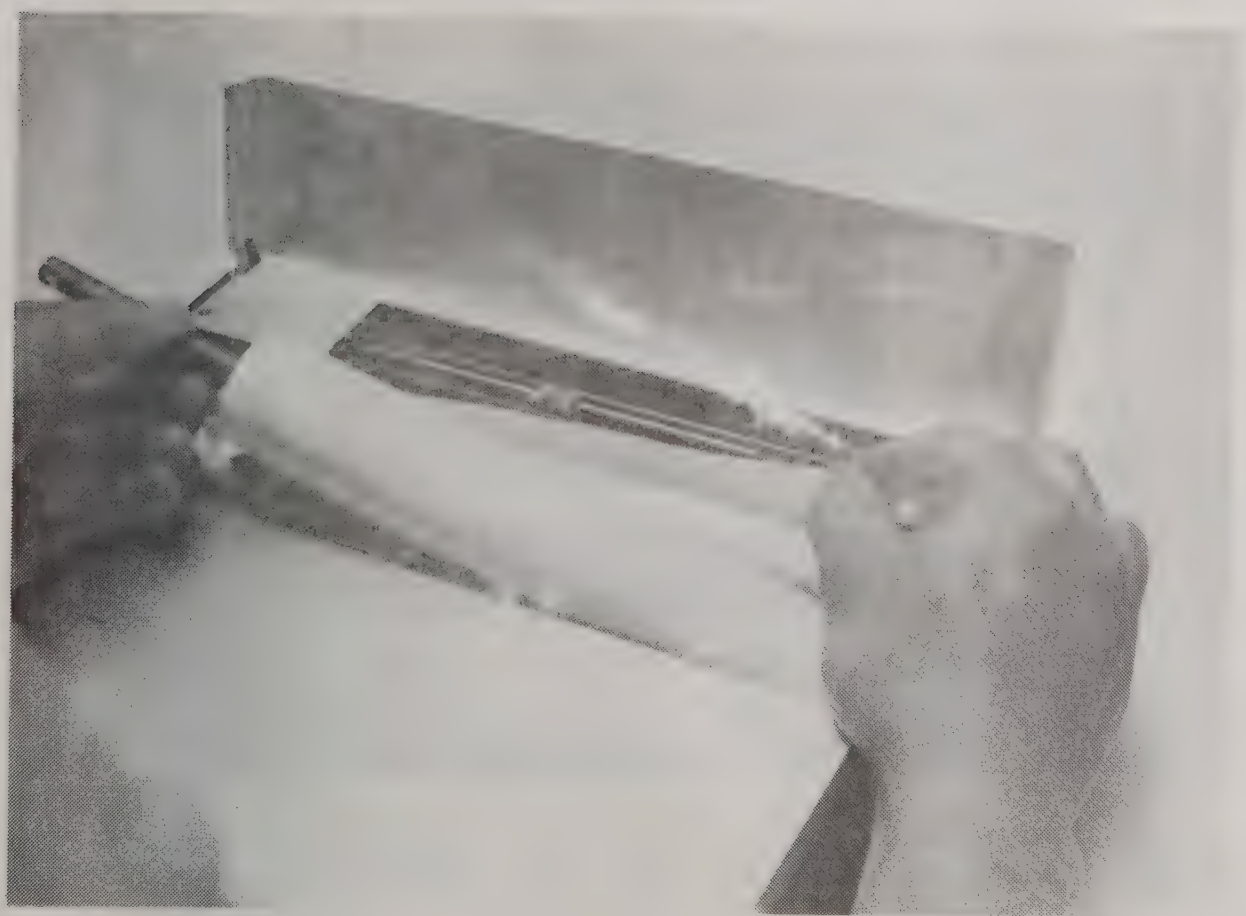


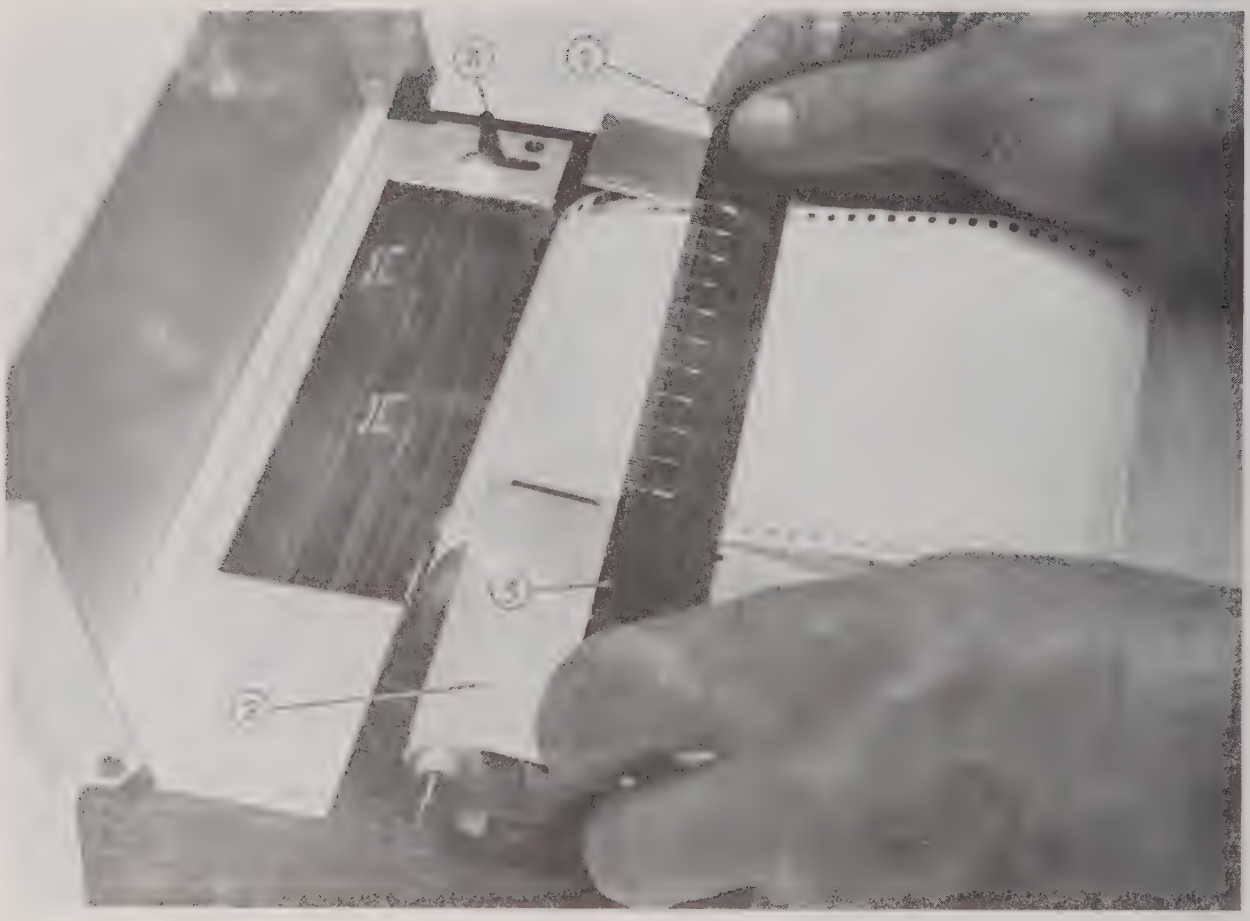
mains- and charger-unit for LM 23.....

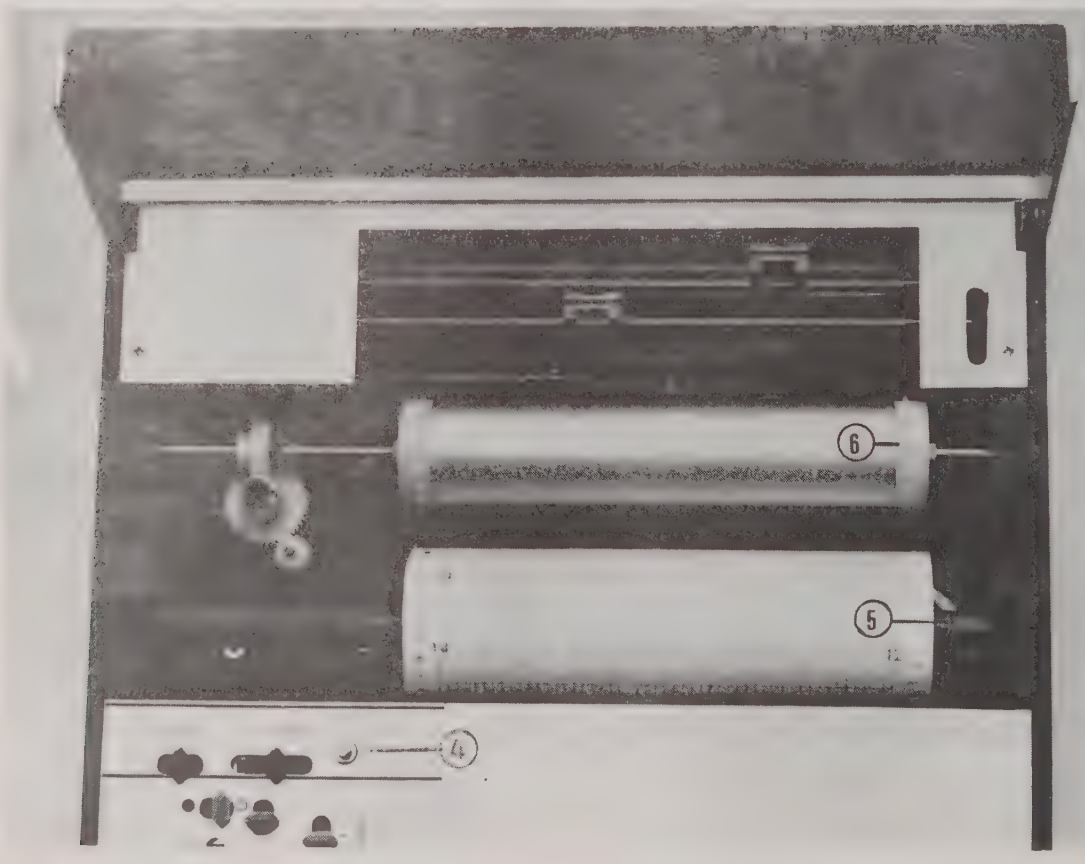
xxxxxxx inputs

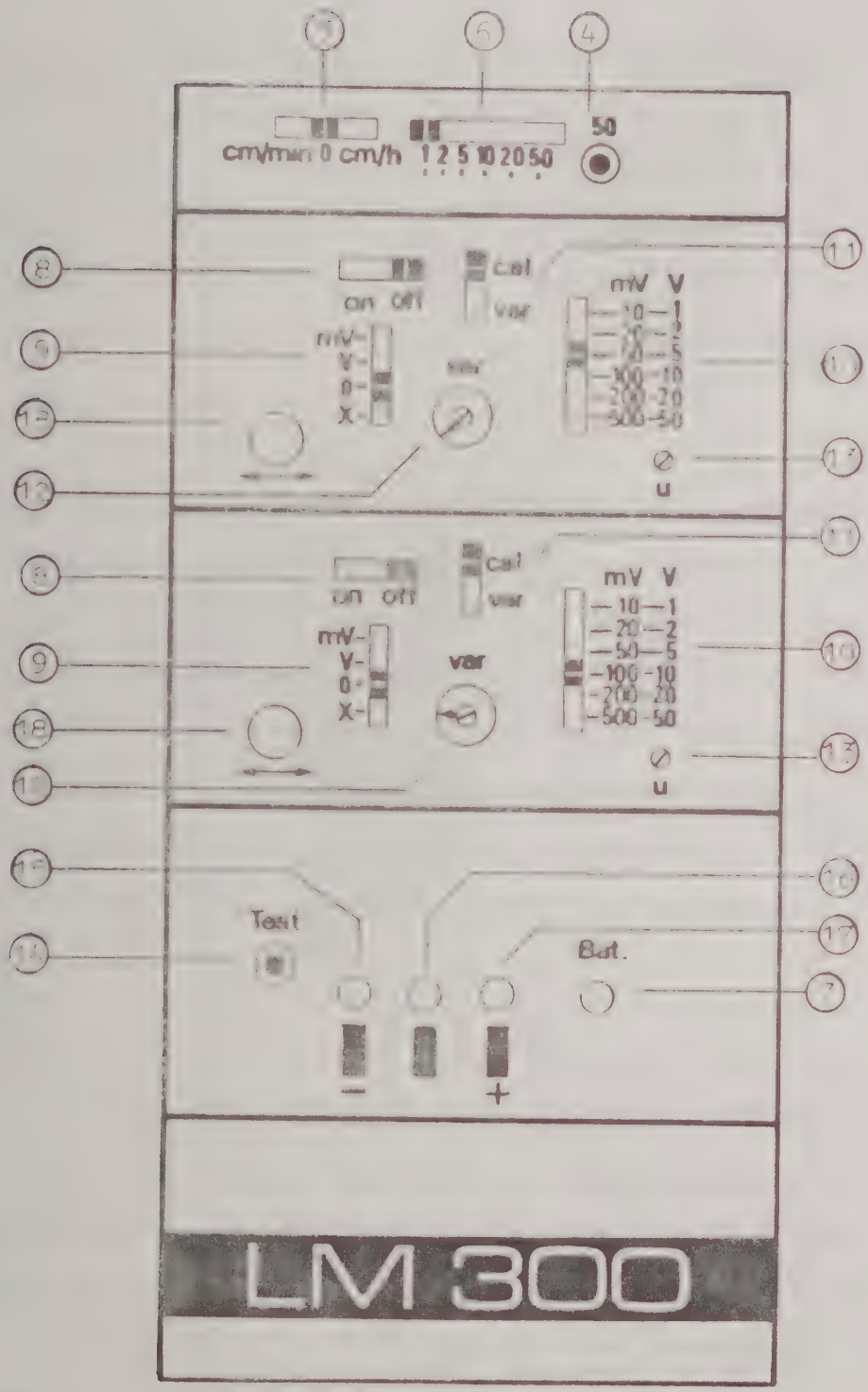
input for mains- and charger-unit

mains-input for LM 24.....






6
5
4


cm/min 0 cm/h 1 2 5 10 20 50
50
on off
cal
var
mV V
mV-
V-
0-
X-
var
u
Test
Batt.
LM 300

5. Paper Advance

5.1 Insertion of Paper

After loosening of the two clips (1), lifting of the fiber tip pen with the lever (X), the cover (2) of the paper storage bin can be removed. Take out supply roll, slip off empty shell, and then mount new roll. Pull paper over advance roll and insert supply roll. Guide paper between scale (3) and cover (2) and clip-on cover (2) to paper storage bin. Push "fast-advance" lever (4) to let some paper run out.

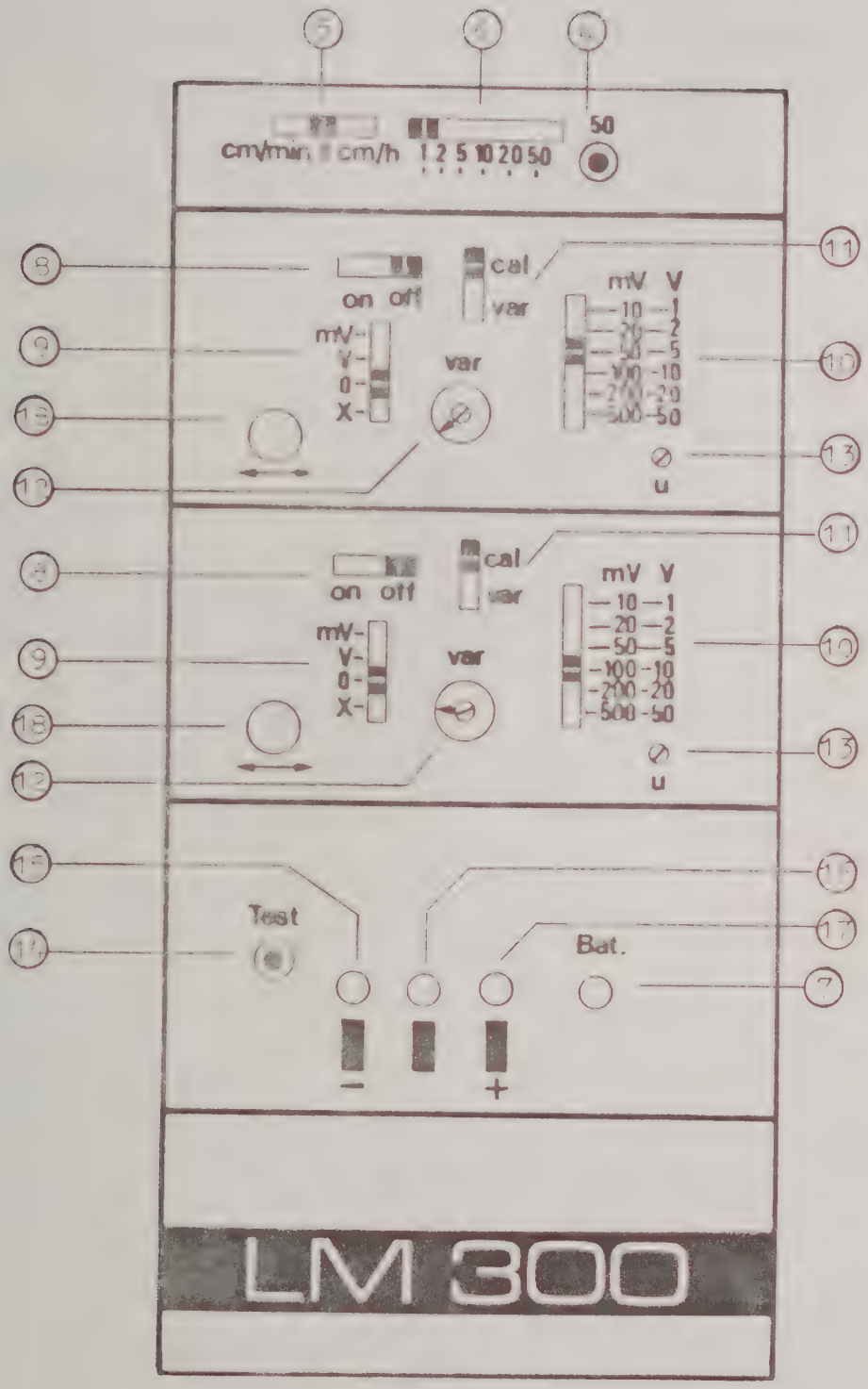
5.2 Controls

The paper advance of the LM recorder is by means of a crystal-controlled stepping motor which has a special circuitry that minimizes power consumption. One can choose from a total of 12 different chart speeds which are preselected by means of the "cm/min-0-cm/h" (5) switch and set by means of switch (6). There is the additional possibility to use the fast-advance for a short period at 50 cm/min to separate subsequent measuring regions. The check that the paper advance is engaged can be made with switch (5) or the LED (7) which lights up with operation of all power users such as Channel 1, circuit board for stepping motor, etc.

5.3 Control for Battery Voltage for LM 23

The LM 23 is a recorder that is equipped for battery operation. The instrument can be operated either from a 12 V DC outlet (lighter outlet in automobile) or from a built-in (optional) battery. There is the additional possibility to operate the LM 23 from the normal line (110/120V, 220/240V, 50/60Hz) by means of the (optional) converter unit.

The charge condition of the battery can be checked any time by means of 3 LEDs. This test does not depend on whether the instrument is turned on or not.

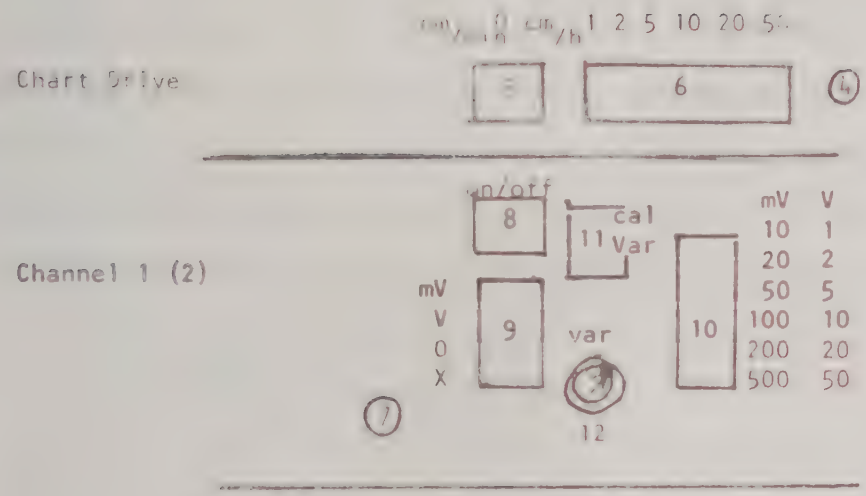

cm/min
cm/h
1 2 5 10 20 50
50
on off
cal
var
mV
V
0
X
var
mV V
10 1
20 2
50 5
100 10
200 20
500 50
u
Test
Bat.
−
+
LM 300

By pressing switch (14) the charge-condition is tested electronically and the result is indicated by the LEDs (15,16,17). These LEDs indicate the following conditions:

LED (15)	red	Voltage is too low; or battery has to be charged.
LED (16)	green	Instrument is operational; battery is sufficiently charged.
LED (17)	yellow	Voltage is at maximum value; charging is completed.

6. Measuring Range Inputs

6.1 Controls of Input Modules



4) Fast advance push button

5) Speed pre-selector switch cm/min-0-cm/h

6) Speed selector switch

7) Zero-setting potentiometer

8) on/off switch (for each channel separate)

9) mV/V/0/X selector switch (X means preamplifier or temperature input module)

10) Range selector switch

11) Cal/var selector for calibrated or variable ranges

12) Variable selector potentiometer

In the "var" position a range expansion is switched in which can be continuously adjusted by potentiometer (12) up to a value of 2.5. Example:

selected range:	10 mV
switch (11):	var
poti (12):	fully turned to right

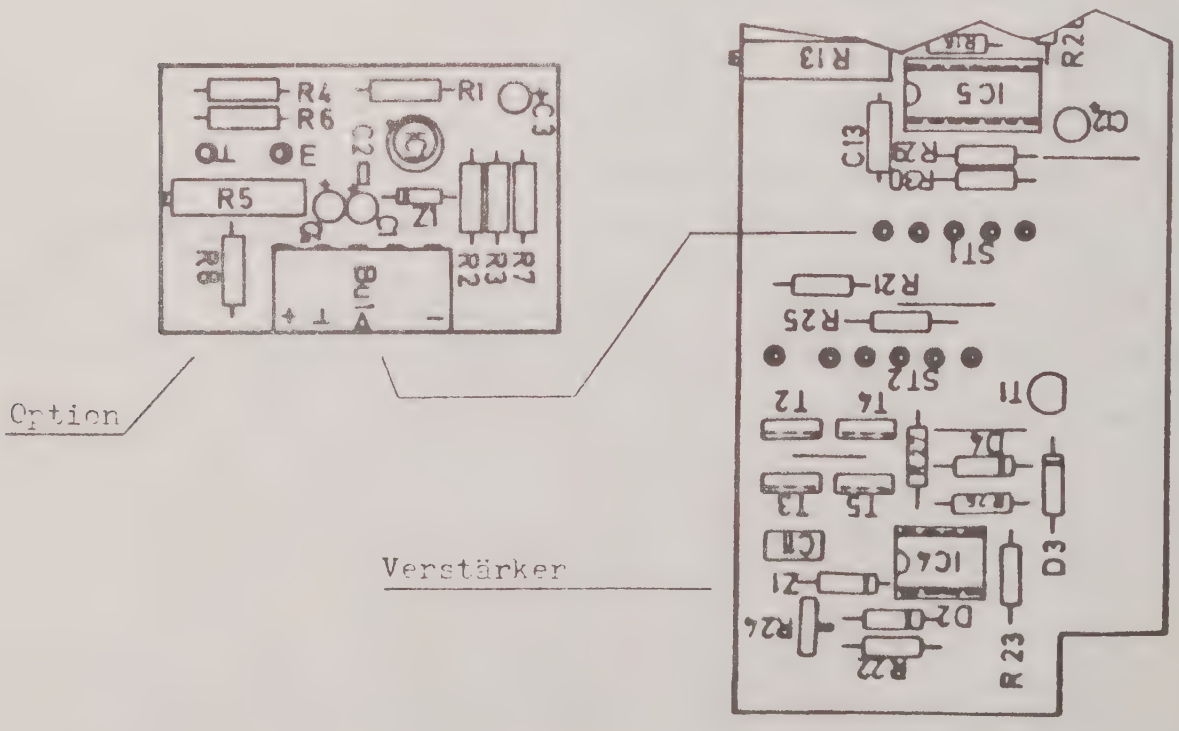
The available range that will cover the total chart width is 4 mV.

If the fiber tip pen moves when the switch is moved through the various mV ranges then Poti "U" (13) can be used to readjust this. This can be achieved by noting the reference line in the 500 mV range and then using the Poti "U" (13) to make the reference line in the 10 mV range agree with that of the 500 mV range.

Input terminals for each channel are on the lower left hand side of the instrument. The red terminal is for the positive signal and the black terminal for the negative signal.

6.2 Measuring Range Options

In addition to the standard ranges of 10 mV - 50 V one can have a number of other measuring range input modules that expand the capability of the instrument with respect to sensitivity, temperature measurement, etc. These input modules are attached to a 5 terminal input (see Fig. below).



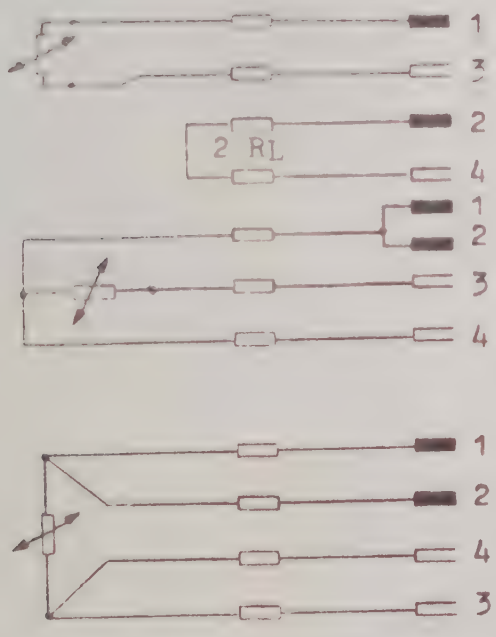
6.2.3 Temperature Measurement with Pt-100

With this measuring range input module one of the below listed ranges is available for use.

a) -100°C - 0°C
b) 0°C - 100°C
c) 100°C - 200°C
d) 200°C - 300°C
e) 300°C - 400°C
f) 400°C - 500°C

The indicated temperature range corresponds to a maximum sensitivity of 100 mV, i.e. 1°C ≙ 1 mV. To raise the sensitivity, and thereby provide the possibility to record smaller temperature ranges, one can switch back to the 10 mV range.

It should be noted that the input terminals for these temperature measuring modules are on the lower right hand side of the instrument. The terminal assignment is indicated in the sketch below.



Pt 100

7. Change of Paper

As in 5.1 Insertion of Paper.

7.1 Change of Fiber Tip Pens

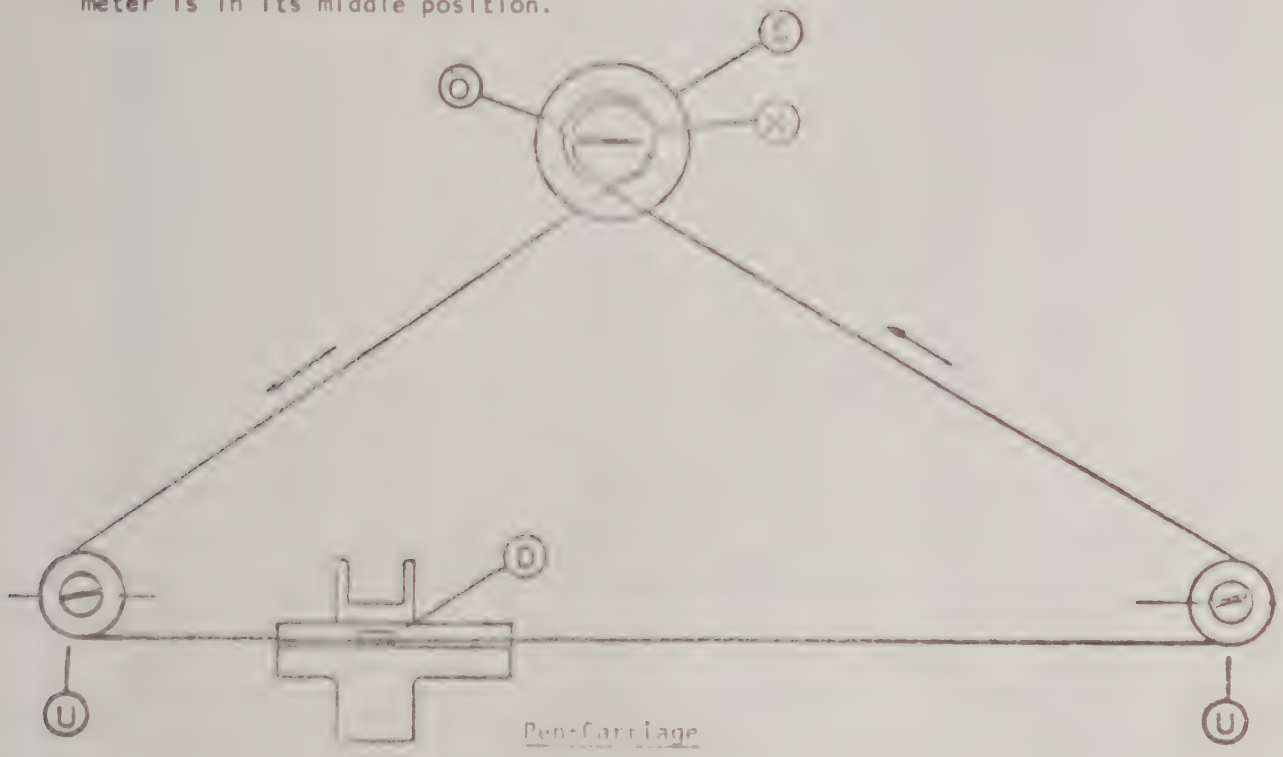
The fiber tip pen used in the Series LM consists of an easily exchangeable fiber tip writing cartridge which can be exchanged by pulling out and inserting. Life time depends on usage. Even though the cartridge can be refilled through the little hole in the ink supply part it is best to replace the pen when the tip is worn out. Pen lift is achieved by means of lever (X).

7.2 Cleaning of Pen-Carriage Rod

Cleaning of the Carriage Rod should be done periodically since dust particles harden, increase the friction, and could possibly result in a freezing of the pen carriage on the rod. To clean only use Methy alcohol. In no case can oil or grease be used.

7.3 Restringing

The replacement of the st[illegible]hould be carried out according to the sketch below. The string-roll has to be p[illegible] and screwed on when the motor potentiometer is in its middle position.



7.4 Replacement of Fuse

The recorders of the Series LM are fused against wrong power supply voltage and max. temperature of charging unit. When fuses are replaced use only the indicated values.

If, after insertion of a new fuse, the fuse blows again or the instrument does not operate properly, then please call our office in Princeton NJ at (609) 921-1857.

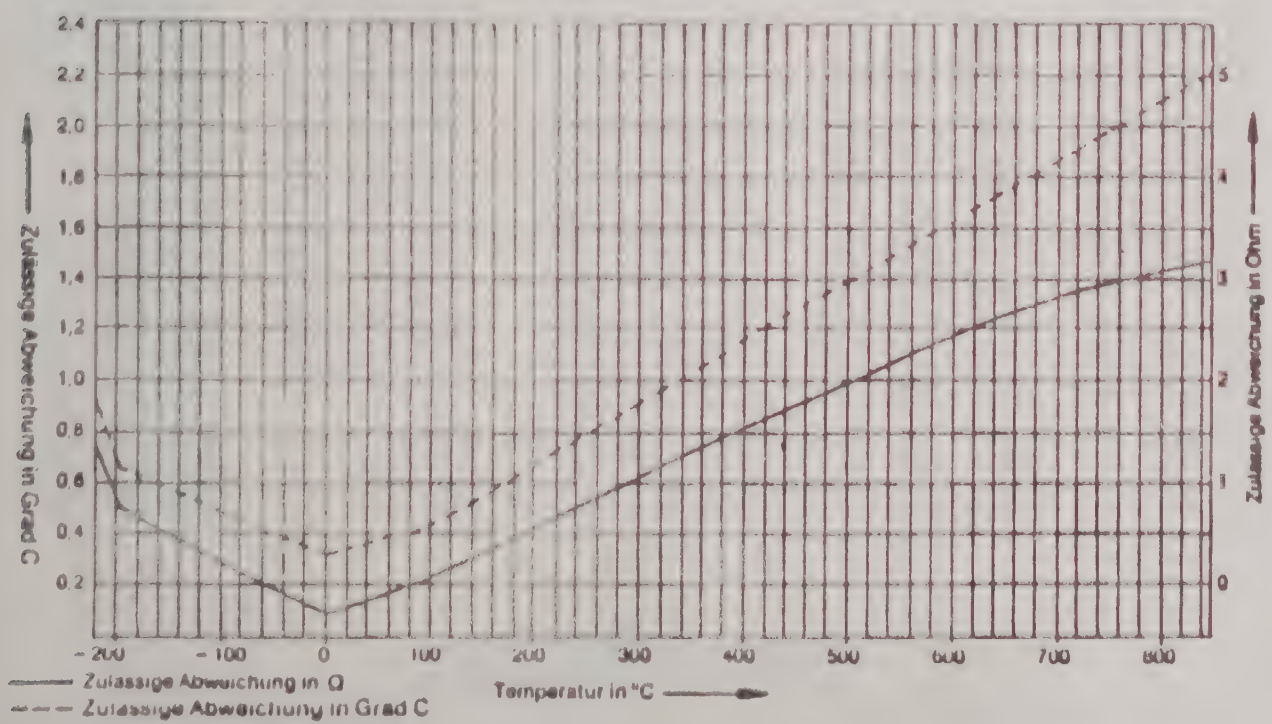
Voltage	Fuse
110 - 120 V	0.5 A tr.
220 - 240 V	0.2 A tr.
12 V	2 A tr. (see technical data)

8. Circuit Diagrams

Temperatur/Widerstandstabelle für PT 100

T (°C)	Widerstand (Ohm)	Ohm/°C
– 220	10,45	
– 210	14,40	0,39
– 200	18,56	0,42
– 190	22,83	0,43
– 180	27,11	0,43
– 170	31,34	0,42
– 160	35,54	0,42
– 150	39,72	0,42
– 140	43,88	0,42
– 130	48,01	0,41
– 120	52,12	0,41
– 110	56,21	0,41
– 100	60,28	0,41
– 90	64,32	0,40
– 80	68,34	0,40
– 70	72,35	0,40
– 60	76,34	0,40
– 50	80,32	0,40
– 40	84,29	0,40
– 30	88,23	0,40
– 20	92,16	0,40
– 10	96,09	0,39
– 0	100,00	0,39
+ 100	103,90	0,39
+ 20	107,79	0,39
+ 30	111,67	0,39
+ 40	115,54	0,39
+ 50	119,40	0,39
+ 60	123,24	0,38
+ 70	127,07	0,38
+ 80	130,89	0,38
+ 90	134,70	0,38
+ 100	138,50	0,38
+ 110	142,29	0,38
+ 120	146,06	0,38
+ 130	149,82	0,38
+ 140	153,57	0,38
+ 150	157,31	0,37
+ 160	161,04	0,37
+ 170	164,76	0,37
+ 180	168,46	0,37
+ 190	172,16	0,37
+ 200	175,83	0,37
+ 210	179,50	0,37
+ 220	183,16	0,37
+ 230	186,82	0,37
+ 240	190,45	0,36
+ 250	194,07	0,36
+ 260	197,69	0,36
+ 270	201,29	0,36
+ 280	204,88	0,36
+ 290	208,46	0,36
+ 300	212,02	0,36
+ 310	215,58	0,36
+ 320	219,12	0,35
+ 330	222,66	0,35
+ 340	226,18	0,35
+ 350	229,69	0,35
+ 360	233,19	0,35
+ 370	236,68	0,35
+ 380	240,16	0,35
+ 390	243,61	0,35
+ 400	247,08	0,35
+ 410	250,52	0,34
+ 420	253,95	0,34
+ 430	257,37	0,34
+ 440	260,77	0,34
+ 450	264,17	0,34
+ 460	267,58	0,34
+ 470	270,94	0,34
+ 480	274,29	0,34
+ 490	277,64	0,34
+ 500	280,98	0,33
+ 510	284,31	0,33
+ 520	287,63	0,33
+ 530	290,93	0,33
+ 540	294,22	0,33
+ 550	297,50	0,33
+ 560	300,76	0,33
+ 570	304,02	0,33
+ 580	307,27	0,33
+ 590	310,51	0,32
+ 600	313,72	0,32
+ 610	316,93	0,32
+ 620	320,12	0,32
+ 630	323,31	0,32
+ 640	326,50	0,32
+ 650	329,60	0,31
+ 660	332,80	0,32
+ 670	335,90	0,31
+ 680	339,10	0,32
+ 690	342,20	0,31
+ 700	345,40	0,32
+ 710	348,40	0,30
+ 720	351,50	0,31
+ 730	354,50	0,30
+ 740	357,70	0,32
+ 750	360,60	0,29
+ 760	363,60	0,30
+ 770	366,60	0,30
+ 780	369,70	0,31
+ 790	372,70	0,30
+ 800	375,60	0,29
+ 810	378,70	0,31
+ 820	381,60	0,29
+ 830	384,60	0,30
+ 840	387,50	0,29
+ 850	390,40	0,29

Zulässige Abweichungen von den Grundwerten bei Meßwiderständen aus Platin


Zulässige Abweichung in Grad C
Zulässige Abweichung in Ohm
Temperatur in °C
Zulässige Abweichung in Ω
Zulässige Abweichung in Grad C

NiCr-Ni (Chromel-Alumel)

°C	mV	mV/°C	°C	mV	mV/°C	°C	mV	mV/°C	°C	mV	mV/°C	°C	mV	mV/°C
− 200	5.891		[illegible]	6.137	0.040	+ [illegible]	20.540	0.043	650	35.814	0.041	+1200	48.828	0.037
190	5.730	0.016	[illegible]	6.539	0.040	[illegible]	21.066	0.043	660	35.718	0.040	1210	49.192	0.036
180	5.550	0.018	[illegible]	6.939	0.040	[illegible]	21.493	0.043	670	36.121	0.040	1220	49.555	0.036
170	5.354	0.020	180	7.338	0.040	510	21.919	0.043	680	36.524	0.040	1230	49.916	0.036
160	5.141	0.021	190	7.737	0.040	[illegible]	22.346	0.043	690	36.925	0.040	1240	50.276	0.036
150	4.912	0.023	+ 200	8.137	0.040	[illegible]	22.772	0.043	+ 700	37.325	0.040	1250	50.633	0.036
140	4.669	0.024	210	8.537	0.040	[illegible]	[illegible]	0.043	710	37.724	0.040	1260	50.990	0.036
130	4.410	0.026	220	8.938	0.040	540	[illegible]	0.043	720	38.122	0.040	1270	51.344	0.035
120	4.138	0.027	230	9.341	0.040	[illegible]	24.050	0.043	730	38.519	0.040	1280	51.697	0.035
110	3.852	0.029	240	9.745	0.040	[illegible]	24.476	0.043	740	38.915	0.040	1290	52.049	0.035
− 100	3.553	0.030	250	10.151	0.041	[illegible]	24.902	0.043	750	39.310	0.040	+1300	52.398	0.035
90	3.242	0.031	260	10.560	0.041	610	25.327	0.043	760	39.703	0.039	1310	52.747	0.035
80	2.920	0.032	270	10.969	0.041	620	25.751	0.042	770	40.096	0.039	1320	53.093	0.035
70	2.586	0.033	280	11.381	0.040	630	26.176	0.043	780	40.488	0.039	1330	53.439	0.034
60	2.243	0.034	290	11.793	0.041	640	26.599	0.042	790	40.879	0.038	1340	53.782	0.034
50	1.889	0.035	+ 300	12.207	0.041	650	27.022	0.042	+1000	41.269	0.039	1350	54.125	0.034
40	1.527	0.036	310	12.623	0.042	660	27.445	0.042	1010	41.657	0.039	1360	54.466	0.034
30	1.156	0.037	320	13.039	0.042	670	27.867	0.042	1020	42.045	0.039	1370	54.807	0.034
20	0.777	0.038	330	13.456	0.042	680	28.288	0.042	1030	42.432	0.039			
10	0.392	0.039	340	13.874	0.042	690	28.709	0.042	1040	42.817	0.039			
∓ 0	0		350	14.292	0.042	+ 700	29.128	0.042	1050	43.202	0.039			
10	0.397	0.040	360	14.712	0.042	710	29.547	0.042	1060	43.585	0.038			
20	0.798	0.040	370	15.132	0.042	720	29.965	0.042	1070	43.968	0.038			
30	1.203	0.040	380	15.552	0.042	730	30.383	0.042	1080	44.349	0.038			
40	1.611	0.041	390	15.974	0.042	740	30.799	0.042	1090	44.729	0.038			
50	2.022	0.041	400	16.395	0.042	750	31.214	0.042	+1100	45.108	0.038			
60	2.436	0.041	410	16.818	0.042	760	31.629	0.042	1110	45.486	0.038			
70	2.850	0.041	420	17.241	0.042	770	32.042	0.041	1120	45.863	0.038			
80	3.266	0.042	430	17.664	0.042	780	32.455	0.041	1130	46.238	0.038			
90	3.681	0.042	440	18.088	0.042	790	32.866	0.041	1140	46.612	0.037			
+ 100	4.095	0.041	450	18.513	0.042	+ 800	33.277	0.041	1150	46.985	0.037			
110	4.508	0.041	460	18.938	0.042	810	33.686	0.041	1160	47.356	0.037			
120	4.919	0.041	470	19.363	0.043	820	34.095	0.041	1170	47.726	0.037			
130	5.327	0.041	480	19.788	0.043	830	34.502	0.041	1180	48.095	0.037			
140	5.733	0.041	490	20.214	0.043	840	34.909	0.041	1190	48.462	0.037			

Fe-Const (Fe-CuNi)

°C	mV	mV/°C	°C	mV	mV/°C	°C	mV	mV/°C	°C	mV	mV/°C	°C	mV	mV/°C
−200	8.15		[illegible]	[illegible]	0.054	[illegible]	18.56	[illegible]	[illegible]	30.75	0.058	+800	46.22	0.067
190	7.88	[illegible]	[illegible]	[illegible]	0.054	[illegible]	17.12	[illegible]	[illegible]	31.33	0.058	810	46.89	0.067
180	7.56	[illegible]	79	[illegible]	0.054	[illegible]	17.68	[illegible]	570	31.91	[illegible]	820	47.57	0.068
170	7.25	[illegible]	[illegible]	[illegible]	0.054	[illegible]	18.24	0.058	580	32.49	0.058	830	48.25	0.068
160	6.93	[illegible]	[illegible]	[illegible]	0.055	[illegible]	18.80	0.056	590	33.08	0.059	840	48.94	0.069
150	6.60	[illegible]	[illegible]	[illegible]	0.055	[illegible]	19.36	0.056	+600	33.67	0.059	850	49.63	0.069
140	6.28	[illegible]	[illegible]	[illegible]	0.055	[illegible]	19.92	0.056	610	34.26	0.059	860	50.32	0.069
130	5.90	[illegible]	[illegible]	[illegible]	0.055	170	20.48	0.056	620	34.85	0.059	870	51.02	0.070
120	5.53	0.037	[illegible]	[illegible]	0.056	[illegible]	21.04	0.056	630	35.44	0.059	880	51.72	0.070
110	5.15	0.038	[illegible]	[illegible]	0.056	[illegible]	21.60	0.056	640	36.04	0.060	890	52.43	0.071
−100	4.75	0.040	[illegible]	[illegible]	[illegible]	+800	22.16	0.056	650	36.64	0.060	+900	53.14	0.071
90	4.33	0.042	[illegible]	[illegible]	0.056	410	22.72	0.056	660	37.25	0.061			
80	3.89	0.044	[illegible]	[illegible]	0.056	420	23.29	0.057	670	37.85	0.060			
70	3.44	0.045	[illegible]	[illegible]	0.056	430	23.86	0.057	680	38.47	0.062			
60	2.98	0.046	190	[illegible]	0.056	440	24.43	0.057	690	39.09	0.062			
50	2.51	0.047	+200	[illegible]	0.056	450	25.00	0.057	+700	39.72	0.063			
40	2.03	0.048	210	[illegible]	0.056	460	25.57	0.057	710	40.35	0.063			
30	1.53	0.050	220	[illegible]	0.056	470	26.14	0.057	720	40.98	0.063			
20	1.02	[illegible]	230	[illegible]	0.056	480	26.71	0.057	730	41.62	0.064			
10	0.51	[illegible]	240	[illegible]	0.056	490	27.28	0.057	740	42.27	0.065			
∓ 0	0		[illegible]	[illegible]	0.056	+500	27.85	0.057	750	42.92	0.065			
10	0.52	[illegible]	[illegible]	[illegible]	0.056	510	28.43	0.058	760	43.57	0.065			
20	1.05	0.053	[illegible]	[illegible]	0.057	520	29.01	0.058	770	44.23	0.066			
30	1.58	[illegible]	[illegible]	[illegible]	0.056	530	29.59	0.058	780	44.89	0.066			
40	2.11	[illegible]	[illegible]	[illegible]	0.056	540	30.17	0.058	790	45.55	0.066			

Bezugstemperatur 0° Celsius

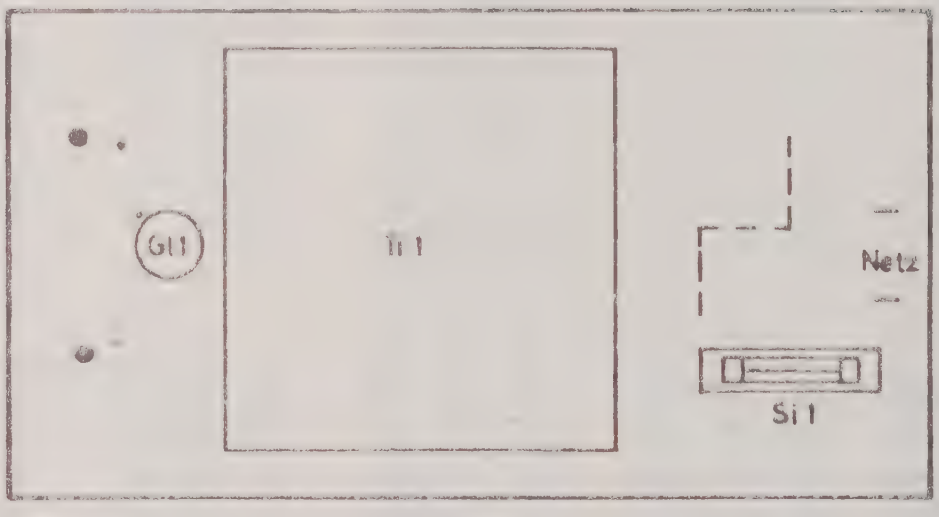
Cu-Const (Cu-CuNi)

°C	mV	mV/°C	°C	mV	mV/°C	°C	mV	mV/°C	°C	mV	mV/°C
−200	5,70		∓ 0	0		+200	9,20	0,053	+400	21,00	0,062
190	5,51	0,019	10	0,40	0,040	210	9,74	0,054	410	21,62	0,062
180	5,32	0,019	20	0,80	0,040	220	10,29	0,055	420	22,25	0,063
170	5,12	0,020	30	1,21	0,041	230	10,85	0,056	430	22,88	0,063
160	4,91	0,021	40	1,63	0,042	240	11,41	0,056	440	23,51	0,063
150	4,69	0,022	50	2,05	0,042	250	11,98	0,057	450	24,15	0,064
140	4,46	0,023	60	2,48	0,043	260	12,55	0,057	460	24,79	0,064
130	4,21	0,025	70	2,91	0,043	270	13,13	0,058	470	25,44	0,065
120	3,95	0,026	80	3,35	0,044	280	13,71	0,058	480	26,09	0,065
110	3,68	0,027	90	3,80	0,045	290	14,30	0,059	490	26,75	0,066
−100	3,40	0,028	+100	4,25	0,045	+300	14,90	0,060	+500	27,41	0,066
90	3,11	0,029	110	4,71	0,046	310	15,50	0,060	510	28,08	0,067
80	2,81	0,030	120	5,18	0,047	320	16,10	0,060	520	28,75	0,067
70	2,50	0,031	130	5,66	0,047	330	16,70	0,060	530	29,43	0,068
60	2,18	0,032	140	6,13	0,048	340	17,31	0,061	540	30,11	0,068
50	1,85	0,033	150	6,62	0,049	350	17,92	0,061	550	30,80	0,069
40	1,50	0,035	160	7,12	0,050	360	18,53	0,061	560	31,49	0,069
30	1,14	0,036	170	7,63	0,051	370	19,14	0,061	570	32,19	0,070
20	0,77	0,037	180	8,15	0,052	380	19,76	0,062	580	32,89	0,070
10	0,39	0,038	190	8,67	0,052	390	20,38	0,062	590	33,60	0,071
									+600	34,31	0,071

PtRh 10 – Pt

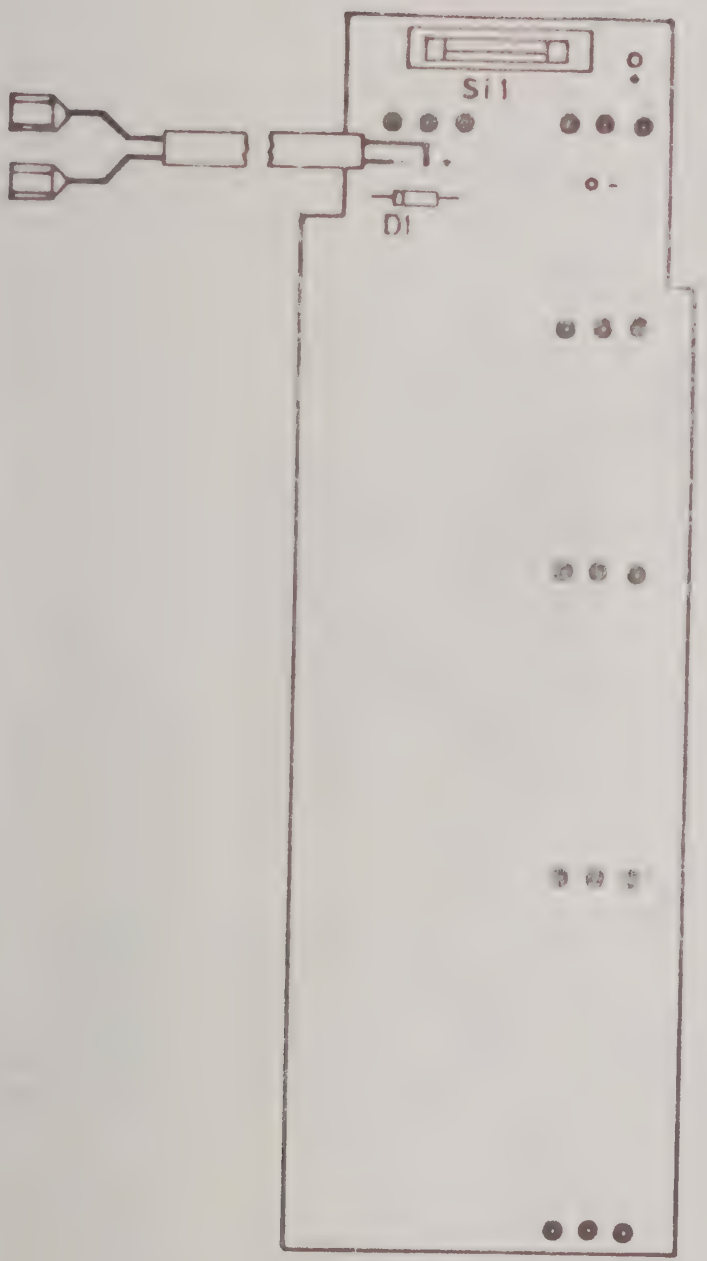
°C	mV	mV/°C	°C	mV	mV/°C	°C	mV	mV/°C	°C	mV	mV/°C	°C	mV	mV/°C
0	0		350	2,786	0,0094	+ 700	6,274	0,0105	1050	10,165	0,0117	+1400	14,368	0,0121
+ 10	0,055	0,0055	360	2,880	0,0094	710	6,180	0,0106	1060	10,282	0,0117	1410	13,489	0,0121
20	0,113	0,0058	370	2,974	0,0094	720	6,486	0,0106	1070	10,400	0,0118	1420	14,610	0,0121
30	0,173	0,0060	380	3,069	0,0095	730	6,592	0,0106	1080	10,517	0,0117	1430	14,731	0,0121
40	0,235	0,0062	390	3,164	0,0095	740	6,699	0,0107	1090	10,635	0,0118	1440	14,852	0,0121
50	0,298	0,0064	+ 400	3,260	0,0096	750	6,805	0,0106	+1100	10,754	0,0119	1450	14,973	0,0121
60	0,165	0,0066	410	3,356	0,0096	760	6,913	0,0107	1110	10,872	0,0118	1460	15,094	0,0121
70	0,432	0,0067	420	3,452	0,0096	770	7,020	0,0108	1120	10,991	0,0119	1470	15,215	0,0121
80	0,502	0,0070	430	3,549	0,0097	780	7,128	0,0108	1130	11,110	0,0119	1480	15,336	0,0121
90	0,573	0,0071	440	3,645	0,0096	790	7,236	0,0108	1140	11,229	0,0119	1490	15,456	0,0120
+ 100	0,645	0,0072	450	3,743	0,0098	+ 800	7,345	0,0109	1150	11,348	0,0119	+1500	15,576	0,0120
110	0,719	0,0074	460	3,840	0,0097	810	7,454	0,0109	1160	11,467	0,0119	1510	15,697	0,0121
120	0,795	0,0076	470	3,938	0,0098	820	7,563	0,0109	1170	11,587	0,0120	1520	15,817	0,0120
130	0,872	0,0077	480	4,036	0,0098	830	7,672	0,0109	1180	11,707	0,0120	1530	15,937	0,0120
140	0,950	0,0078	490	4,135	0,0099	840	7,782	0,0110	1190	11,827	0,0120	1540	16,057	0,0120
150	1,029	0,0079	+ 500	4,234	0,0099	850	7,892	0,0110	+1200	11,947	0,0120	1550	16,176	0,0119
160	1,109	0,0080	510	4,333	0,0099	860	8,003	0,0111	1210	12,067	0,0120	1560	16,296	0,0120
170	1,190	0,0081	520	4,432	0,0099	870	8,114	0,0111	1220	12,188	0,0121	1570	16,415	0,0119
180	1,273	0,0083	530	4,532	0,0100	880	8,225	0,0111	1230	12,308	0,0120	1580	16,534	0,0119
190	1,356	0,0083	540	4,632	0,0100	890	8,336	0,0111	1240	12,429	0,0121	1590	16,653	0,0119
+ 200	1,440	0,0084	550	4,732	0,0100	+ 900	8,448	0,0112	1250	12,550	0,0121	+1600	16,771	0,0118
210	1,525	0,0085	560	4,832	0,0100	910	8,560	0,0112	1260	12,671	0,0121	1610	16,890	0,0119
220	1,611	0,0086	570	4,933	0,0101	920	8,673	0,0113	1270	12,792	0,0121	1620	17,008	0,0118
230	1,698	0,0087	580	5,034	0,0101	930	8,786	0,0113	1280	12,913	0,0121	1630	17,125	0,0117
240	1,785	0,0087	590	5,136	0,0101	940	8,899	0,0113	1290	13,034	0,0121	1640	17,243	0,0118
250	1,873	0,0088	+ 600	5,237	0,0102	950	9,012	0,0113	+1300	13,155	0,0121	1650	17,360	0,0117
260	1,962	0,0089	610	5,339	0,0102	960	9,126	0,0114	1310	13,276	0,0121	1660	17,477	0,0117
270	2,051	0,0089	620	5,442	0,0103	970	9,240	0,0114	1320	13,397	0,0121	1670	17,594	0,0117
280	2,141	0,0090	630	5,544	0,0103	980	9,355	0,0115	1330	13,519	0,0122	1680	17,711	0,0117
290	2,232	0,0091	640	5,648	0,0103	990	9,470	0,0115	1340	13,640	0,0121	1690	17,826	0,0115
+ 300	2,323	0,0091	650	5,751	0,0103	+1000	9,585	0,0115	1350	13,761	0,0121	+1700	17,942	0,0116
310	2,414	0,0091	660	5,855	0,0104	1010	9,700	0,0115	1360	13,883	0,0122	1710	18,056	0,0114
320	2,506	0,0092	670	5,960	0,0105	1020	9,816	0,0116	1370	14,004	0,0121	1720	18,170	0,0114
330	2,599	0,0093	680	6,064	0,0104	1030	9,932	0,0116	1380	14,125	0,0121	1730	18,282	0,0112
340	2,692	0,0093	690	6,169	0,0105	1040	10,048	0,0116	1390	14,247	0,0122	1740	18,394	0,0112
												1750	18,504	0,0110
												1760	18,612	0,0108

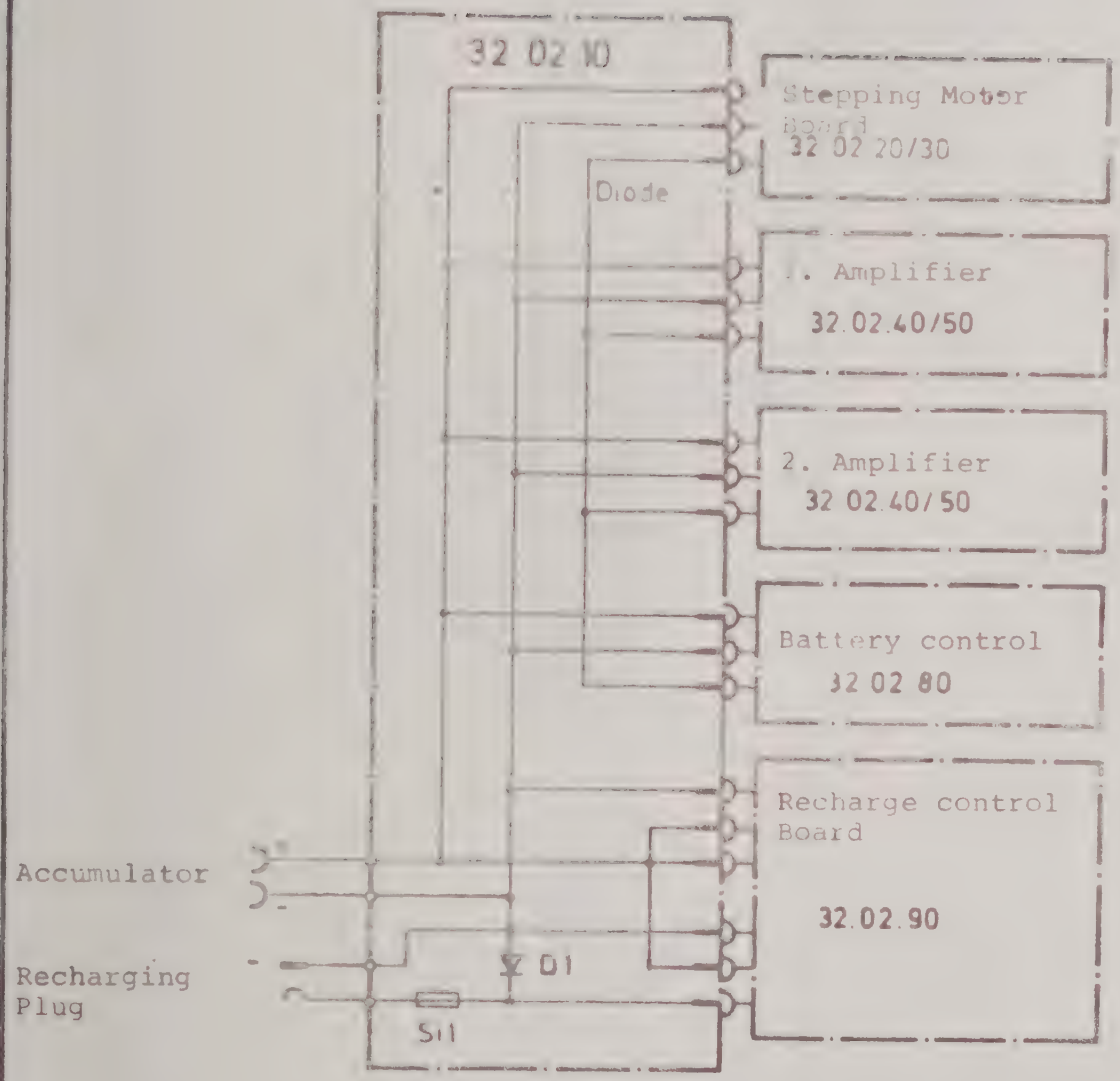
Bezugstemperatur 0° Celsius



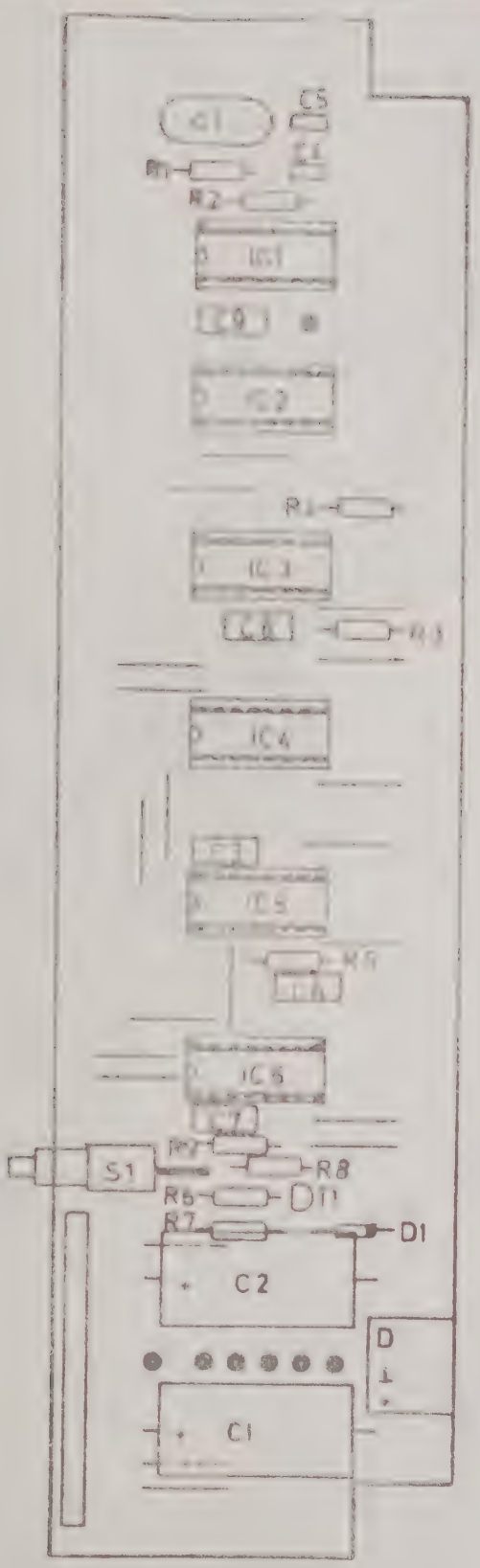
110 V

220 V

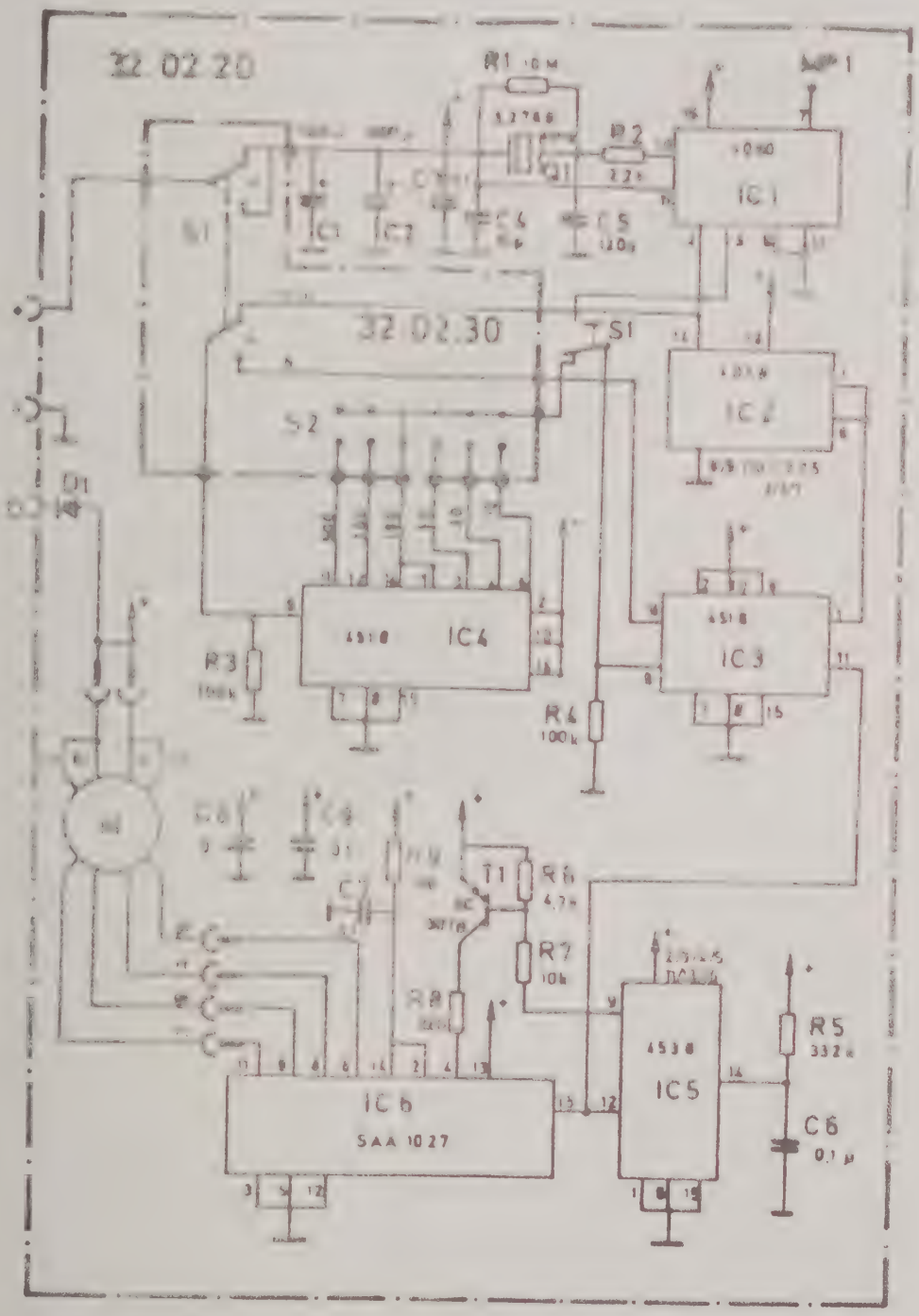

Si1
D1



LM 300 Main Board 32.02.16

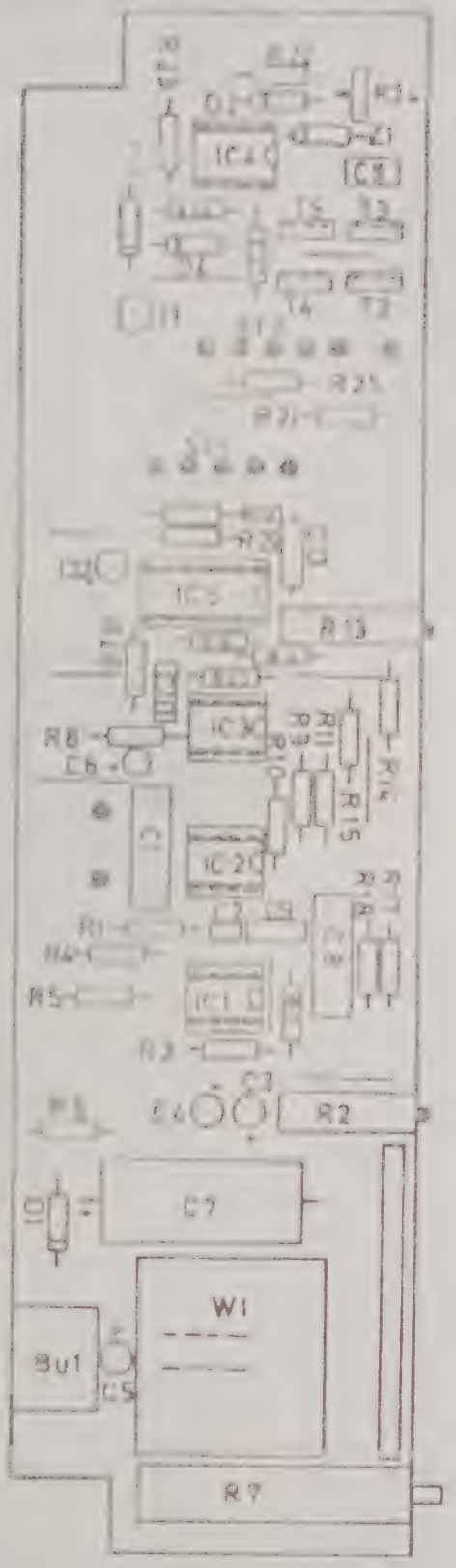


LM 300 STEPPING MOTOR BOARD 32.02.23

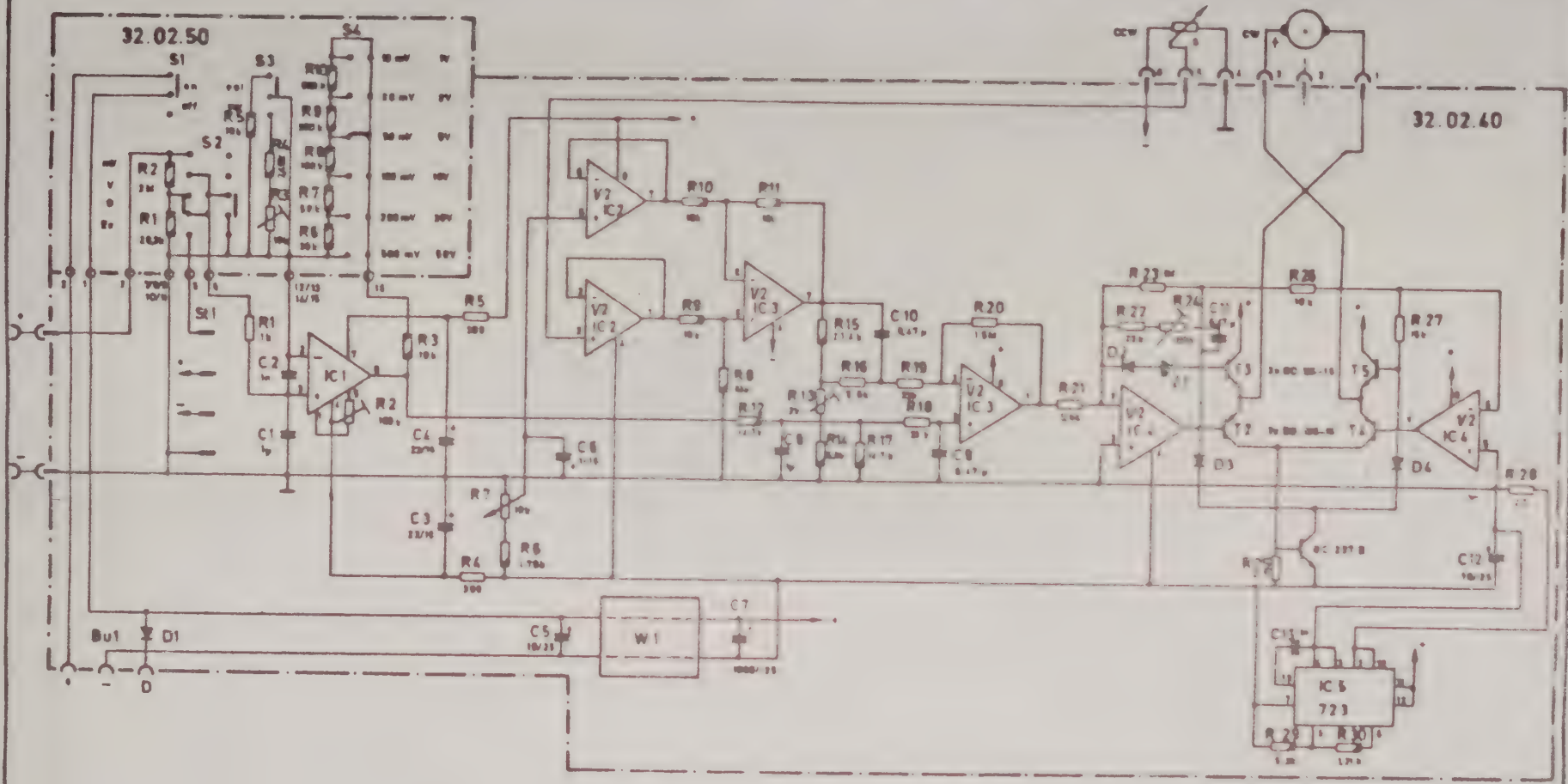


STEPPING MOTOR BOARD LM 300 32.02.26

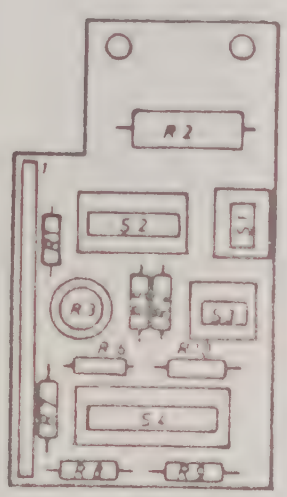
52
51



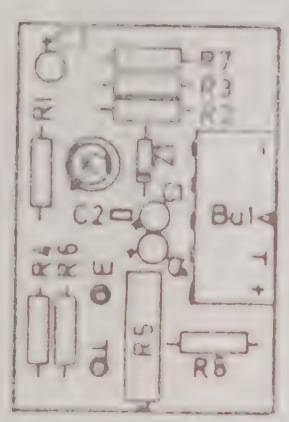
LM 300 AMPLIFIER BOARD 32.02.43



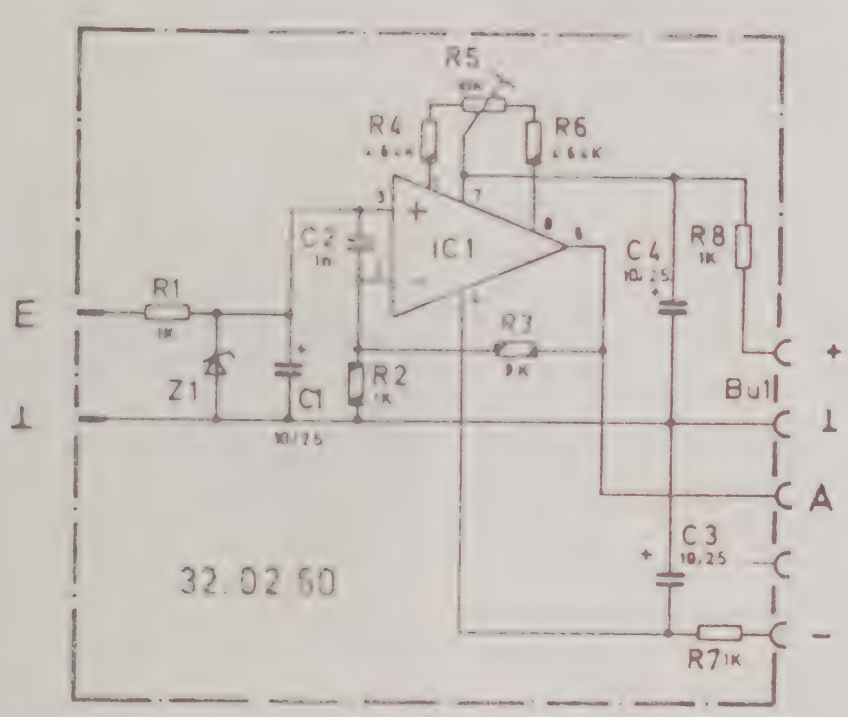
LM 300 AMPLIFIER BOARD 32.02.46



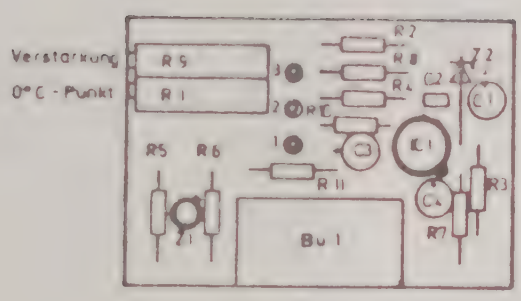
MEASURING INPUT BOARD 32.02.53



LM 300 PREAMPLIFIER 32.02.63



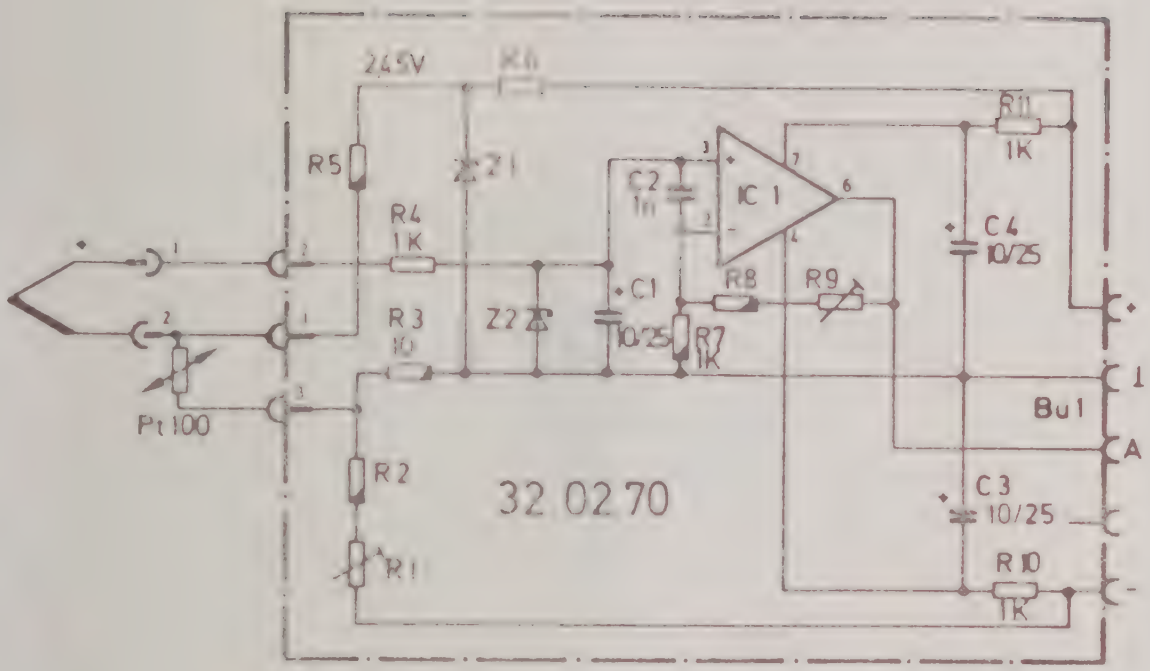
LM 300 PREAMPLIFIER 32.02.66



		Freimaßtoleranzen	bis	6	30	120	315	1000	2000	Werkstoff	
		DIN 7168 mittel	±	0.1	0.2	0.3	0.5	0.8	1.2		
										LINSEIS GmbH Selb/Bay.	Thermoelement-Eingang für LM 300 und L 600
										Bearb. 18.07.26	32.02.73
										Gepr. 18.7.	
Paßmaß	Abmaß	Index	Änder.	Tag	Name	19 80	Tag	Name		Ersatz für	

Freimaßtoleranz

Maßstab 1:1

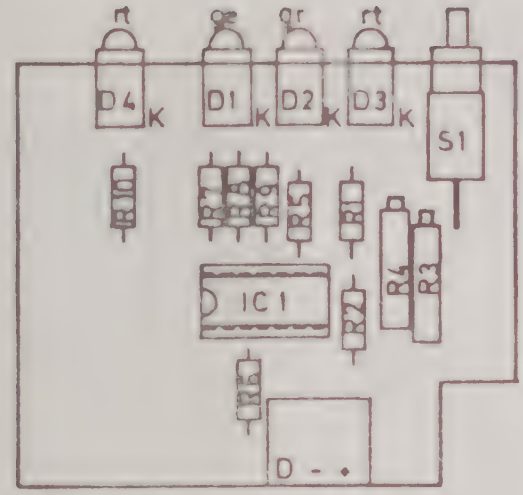


R1, R2, R5 je nach Thermoelement
according to thermocouple

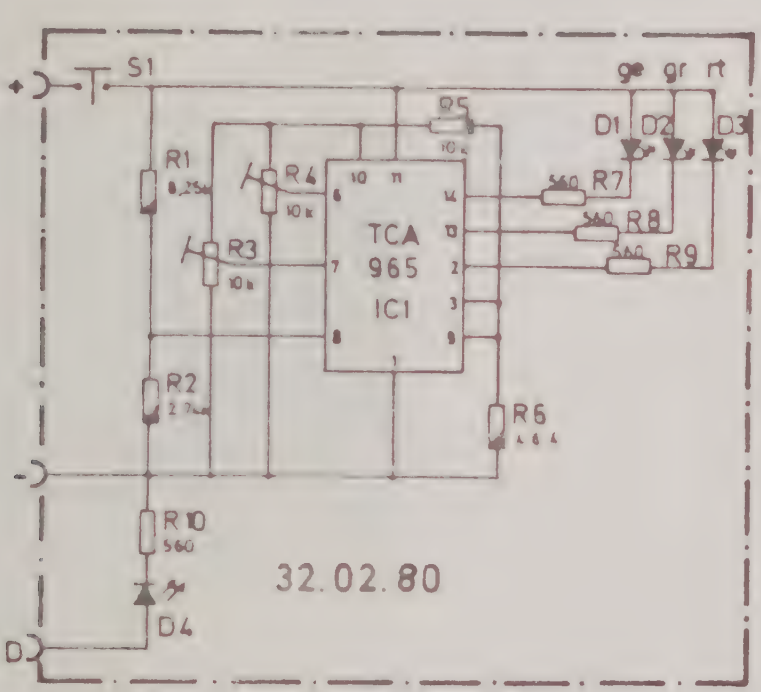
R8, R9 je nach Meßbereich
according to measuring range

Meßbereich 50 mV am Einschub für alle Temperaturbereiche
measuring range 50 mV on the input module for all temperature ranges

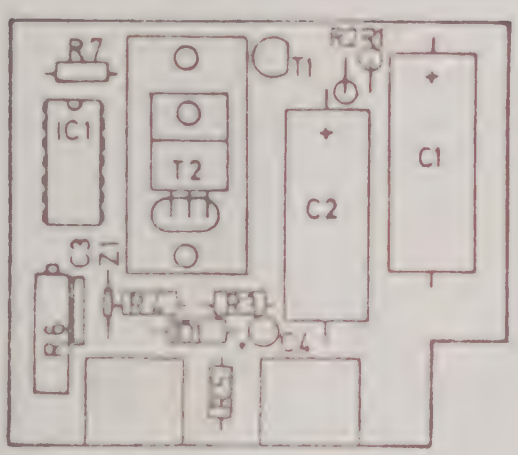
		Freimaßtoleranzen DIN 7168 mittel	bis	6	30	120	315	1000	2000	Werkstoff			
			±	0,1	0,2	0,3	0,5	0,8	1,2				
						LINSEIS GmbH Selb/Bay.				Thermoelement-Eingang für LM 300 und L 600		Freimaß-toleranz	
						Bearb.	18 07	P		32.02.76		Maßstab	
						Gepr.							
Paßmaß	Abmaß	Index	Änder.	Tag	Name	19 80	Tag	Name		Ersatz für			



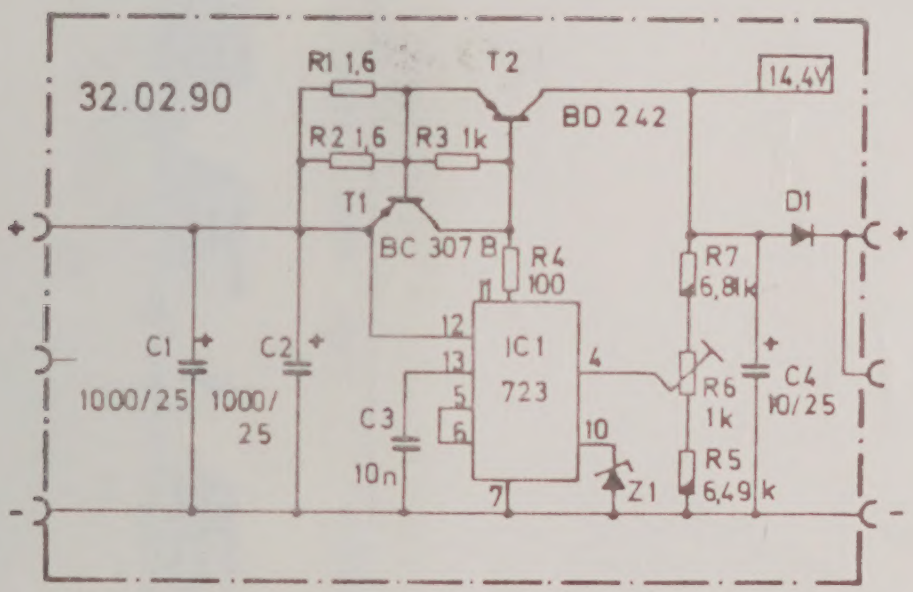
LM 300 BATTERY CONTROL 32.02.86



LM 300 BATTERY CONTROL 32.02.86



LM 300 RECHARGE CONTROL BOARD 32.02.90



LM 300 BATTERY RECHARGE CONTROL BOARD 32.02.90

MP MASTER
MA29147